ENCLOSURE 1

AN EVALUATION OF POTENTIAL IMPACTS TO FEDERALLY LISTED SPECIES THAT MAY RESULT FROM THE IMPLEMENTATION OF THE PROSPECT ISLAND RESTORATION PROJECT

Prospect Island is located in Solano County between the Sacramento River Deep Water Ship Channel and Miner Slough (see Figure 1). The objective of the Prospect Island project is to restore degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition to benefit fisheries and wildlife. The planning objectives established for the formulation and evaluation of alternative plans are to create habitat that may be suitable for delta smelt and Sacramento splittail; develop habitat that may be suitable for feeding, cover, and resting areas for anadromous fish; improve waterfowl and shorebird habitat; and provide terrestrial and aquatic habitat for other wildlife species. The Department of Water Resources (DWR) is the non-Federal sponsor for the proposed project.

Implementation of the restoration work would include excavating channels, building islands, building berms along existing levees, planting, and breaching the levee in two sections to return tidal influences. Finally, DWR would monitor the restoration project after it is implemented (see Enclosure 2), [attachment C].

Although the restoration objective of the project is to allow for the natural processes inherent in a tidal freshwater marsh system, the project was designed so that the islands and existing perimeter levees would persist. To confirm this, the Corps conducted an hydraulic modeling study, which is summarized in the "Hydraulic Design Report", Appendix H of the "Project Modification Report". This report notes that although "erosion is expected on the Prospect Island interior islands immediately following construction, once vegetation on the islands has been established, erosion should be minimal." The Corps plans to install vegetation prior to breaching the levees, thereby minimizing erosion further. The report also concludes that the potential for scouring and sedimentation within the project area after construction would be negligible. For the reasons summarized above, the Corps has concluded that the project should be self-sustaining.

The evaluation of impacts that follows is based on the October 1997 draft EA/IS and subsequent coordination with U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS). According to the species list received from the USFWS in a letter dated April 17, 1998 (Ref# 1-1-98-SP-1150), the Federally listed species that may occur within, or be affected by projects within, the USGS Liberty Island and Rio Vista Quads include the American peregrine falcon, Aleutian Canada goose, bald eagle, giant garter snake, California red-legged frog, Sacramento River winter-run chinook salmon and its critical habitat, delta smelt and its critical habitat, Central Valley ESU steelhead, Conservancy fairy shrimp, vernal pool tadpole shrimp, vernal pool fairy shrimp, valley elderberry longhorn beetle, and delta green ground beetle. Federally listed plants that are on the Solano County list and may occur within the project area include Suisun thistle, salt marsh bird's beak, soft bird's beak, Contra Costa goldfields, Solano grass, and Colusa grass. The Federally proposed species include the riparian woodrat, riparian brush rabbit, Central Valley ESU spring-run chinook salmon and its critical habitat, Central Valley ESU fall/late fall-

run chinook salmon and its critical habitat, and Sacramento splittail. In addition, two candidate species and 41 species of concern were included on your list.

A search of the Natural Diversity Database revealed no occurrences in the project area of the American peregrine falcon, Aleutian Canada goose, riparian woodrat, riparian brush rabbit, giant garter snake, California red-legged frog, Conservancy fairy shrimp, vernal pool tadpole shrimp, vernal pool fairy shrimp, delta green ground beetle, and any of the listed plants. In addition, there is no suitable habitat in the project area for these species. While there is potential roosting habitat for bald eagles, they would only be occasional transient visitors and would not likely be adversely affected. Elderberry shrubs, the host for the valley elderberry longhorn beetle, were found in the project area but will not be affected by construction. The shrubs will be fenced off during construction to prohibit any damage to the plants.

The only listed or proposed species that may be adversely affected by the proposed project are the fish, i.e., Sacramento splittail, Sacramento River winter-run chinook salmon and its critical habitat, Central Valley ESU steelhead, delta smelt and its critical habitat, Central Valley ESU fall/late fall-run chinook salmon and its critical habitat, and Central Valley ESU spring-run chinook salmon and its critical habitat. The implementation of the project is expected to have a net benefit for these species, but because there is some potential that they will be exposed to adverse environmental conditions, a monitoring program will be required. If adverse conditions are identified through the monitoring program, corrective actions will be identified and the steps necessary to obtain funding will be taken.

Breaching of Prospect Island levees at two places is the only part of project implementation that may have some minor impact to habitat for the listed fish species. These impacts will be minimized by avoiding the spawning period for delta smelt and Sacramento splittail (i.e., breaching between August 1 and November 30). In addition, the habitat that will be created by implementing the project will compensate many times over for these minor impacts. The benefits to these species are described in the following paragraphs.

According to the FWS's draft Coordination Act Report (CAR) prepared in March 1997, "any low-elevation riparian areas created by the restoration project would likely benefit the Sacramento splittail by providing preferred spawning habitat. This species would also benefit from the general increase in the area of productive shallow-water rearing habitat. Splittail year class strength is currently believed to be strongly related to the extent and duration of flooding of the Yolo Bypass, located primarily upstream of the project area." According to the CAR, no adverse effects to this species are anticipated from the proposed project.

The proposed project would increase the overall area of shallow-water habitat in the delta in association with palustrine shade cover which would moderate temperatures. According to the CAR, this habitat would benefit winter-run chinook salmon. Similarly, it would benefit the Central Valley ESU fall/late fall-run chinook salmon and the Central Valley ESU spring-run chinook salmon. However, the CAR goes on to say: "The extent to which salmon would use the site for rearing would likely be limited by its indirect connection to the Sacramento River through Miner Slough and the Yolo Bypass; during wetter years, there

may be sufficient flows to carry significant numbers of young salmon into the project area." According to the CAR, the effects of the proposed project on the Central Valley ESU steelhead would be similar to the chinook salmon.

Since the project would increase the overall area of productive shallow water habitat in an area in close proximity to a known spawning area for the delta smelt, it should greatly benefit this species. In the CAR, the USFWS states: "Given this species' preference for shallow waters with good tidal action, the proposed project would likely confer a significant benefit to delta smelt by providing habitat for spawning and rearing of early life stages."

Despite the expected benefits to listed species described in the preceding paragraphs, there remains some potential that adverse environmental conditions could develop within the project area. For example, unexpected deposition of sediment could affect circulation and result in the development of areas with low dissolved oxygen, fish could become stranded in shallow water, and predators could become established in disproportionate numbers. We believe the project design has addressed these problems. The following facts about the project demonstrate that the potential for most of these problems to develop is minimal:

- The expected rate of water replacement, a factor in water quality, was also modeled as part of the hydraulic design report. Water will remain about 1.3 days before exiting. The criterion used for the Cache Slough/Yolo Bypass site, a similar Corps tidal freshwater wetland project in the immediate vicinity, was 7 days. Therefore, low levels of dissolved oxygen would not be likely to occur.

- Most of the site is under water nearly all the time. About 90 percent of the site is at or below +1 foot mean sea level (msl). Elevations range from 2 feet msl at the northern end of the site to -5 feet msl at the southern end. Since the tides range from about 4 feet msl at high-high tide, and 2 feet msl at mean water to -0.3 at low-low tide, much of the site is under water all the time. Therefore, there would be no significant loss of fish due to stranding within the site.

- As we have already indicated, scouring would be negligible at the site, and, therefore, significant scour holes in which fish might be entrapped would not develop.

- Tides would enter and exit Prospect Island twice a day. Although the breaches are likely to mute the tidal effect in Prospect Island to some extent, given the 300-foot size of the breach, strong tidal effect would allow out migrating salmon and other fish to follow the tides out of the site.

- The project is located in a sediment-poor area. Cache Slough/Yolo Bypass has accreted little sediment. It is expected that Prospect Island would also accrete little sediment that would trap fish within the site.

Although problems like those discussed above are not likely to develop to the extent that the net impact would be negative to the listed or proposed species, there is some potential that they could. Therefore, a monitoring program will be required. This monitoring

program will be useful to document the project's benefits for targeted aquatic, terrestrial, and avian species. Fish resource monitoring conducted in the project area after project construction may result in the take of listed fish species.

In order to measure the success of the Prospect Island project, DWR will assemble a team of scientists to monitor different aspects of the project for 3 years after construction. After the second year of monitoring and dependant upon subsequent assessment, additional funds may be requested to extend monitoring. An Interagency Ecological Program (IEP) Project Work Team consisting of representatives from DWR and the Department of Fish and Game would conduct the monitoring under the guidance of a project coordinator from DWR. The project would monitor fish, wildlife, water quality, vegetation, phytoplankton, zooplankton, benthic invertebrates, bathymetry, and organic carbon production. Each monitoring element has specific questions to address and its own objectives, although information from all of the monitoring elements would be used to evaluate physical and biological processes that result from the creation of different types of habitat. Where possible, the different elements would use the same sampling times and locations to facilitate data correlation between the elements. The Project Work Team would meet regularly to discuss the success of sampling efforts, review the results obtained from sampling, and compare data. Data will be available through the IEP Home Page and summarized in the quarterly IEP Newsletters. An annual report will be prepared. A complete description of the proposed monitoring program developed by DWR is included in Enclosure 2.

An adaptive management like approach would be applied during post construction monitoring. Criteria for evaluating project performance will be developed in coordination with FWS and NMFS. If the Project Work Team, FWS, or NMFS detect any problems with the functioning of the project that cannot be addressed by the FWS through their operation and management of the project, the Corps or DWR will immediately convene a meeting with appropriate personnel to discuss the problem and identify solutions. If the identified problem would impede achievement of the project goals, the Corps would prepare documentation of that deficiency and a request for funds to address the problem. Approved solutions would be cost-shared with the local sponsor. Measures to address potential adverse effects to fish resources may include, but would not be limited to, dredging or planting additional vegetation. Any cost-shared solutions would be fully coordinated with NMFS and FWS. Also, any potential future levee failures would be addressed in the long-term operation and management of the project, which would be the responsibility of DWR and FWS. DWR and FWS are drafting a cooperative management agreement which would be executed before project construction begins. As part of this agreement, DWR and FWS would have an endowment fund that would accrue sufficient interest for routine Prospect Island levee maintenance on Miner Slough. In addition, DWR and FWS plan to have a reserve fund that would be available to enable timely repair of any major Prospect Island levee failure which adversely affects the project.

CONCLUSION

Although breaching of Prospect Island levees at two places may have some minor impact to habitat for listed fish species, it is our biological assessment that the Corps' proposed construction plans would not adversely affect any Federally listed or proposed species or

critical habitats in the project area. In fact, we expect the project to be beneficial to delta smelt, Sacramento splittail, Central Valley ESU steelhead, and the chinook salmon species. However, there is some potential that conditions will develop within some portions of the restored habitat that may be harmful to these listed species. Therefore, a monitoring program has been established so that problems can be detected. In the process of monitoring, listed species will be taken, which will require that we obtain an incidental take permit. If the monitoring reveals that listed species are being exposed to environmental hazards, corrective actions will be identified and the steps necessary to obtain funding will be taken. We need to enter into Section 7 consultation with both NMFS and FWS to obtain incidental take permits for monitoring and to address the plan of action if conditions develop that are harmful to listed species.